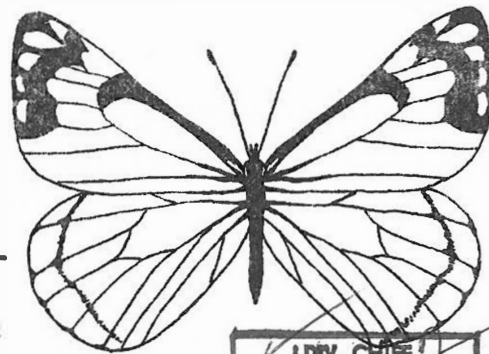


MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DIVISION OF FORESTRY

INSECT AND DISEASE REPORT



Report 73-1

949
January 1973

FOREST INSECT CONDITIONS IN MONTANA - 1972

by
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Cooperative Forest Management Section

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INTRODUCTION

Insects, as well as diseases, are principal causes of unregulated drain on the forests of Montana. There is great opportunity for increasing timber production and for preserving forests for recreational and aesthetic uses by reducing damage and losses caused by these agents. In western Montana alone, approximately 63 million cubic feet of growing stock and 312 million board feet of sawtimber are killed yearly on commercial forest lands by insects and diseases. This represents an estimated annual loss to the State of over \$46 million in forest products and related benefits.

Insects and diseases also cause a serious inhibition of growth of trees attacked but not killed. Besides growth loss, insect attacks may result in top kill or deformities which cause reduction in quality of timber resources. Seed and cone insects also destroy the seed crops necessary in reforestation of logged or burned areas.

Responsibilities of the Division of Forestry Insect and Disease Control Program fall into four basic areas:

1. Encouraging and facilitating the use of preventive measures of demonstrated effectiveness on State and private forest lands as the first line of defense against destructive insects and diseases.
2. Stimulating and facilitating a detection program with surveys of sufficient intensity and frequency to insure prompt discovery of forest insect and disease outbreaks on State and private lands.
3. Providing for thorough and penetrating biological and environmental impact evaluations of insect and disease outbreaks on State and private forest lands and cost-benefit analyses as the basis for deciding for or against suppression.

4. Practicing and encouraging the use of effective means of forest insect and disease control which provide the least potential hazard to man, domestic animals, wildlife and other components of the natural environment.

PROGRAM ACCOMPLISHMENTS

Several evaluations and studies were made during 1972 which included:

1. An aerial insect and disease detection survey was initiated in cooperation with the U. S. Forest Service, Region 1, Division of State and Private Forestry. Blocks of forest land flown on the survey by the Division of Forestry contain the bulk of State and private ownerships, including the Swan River, Stillwater and Coal Creek State Forests. A total of 3,830,400 acres of forest land were aerially surveyed by the Division of Forestry and insect and disease infestations were mapped.
2. Training sessions in insect and disease recognition, field surveillance and reporting were held for 37 field personnel, and an effective field surveillance reporting system was set up. Over 40 field detection reports and damage samples were received during the year.
3. A study area was provided by the Division of Forestry for a test of Bacillus thuringensis, a bacterial control agent for use against pine butterfly. The U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station conducted the test. The Division entomologist assisted in the spray application and post-spray mortality counts.
4. A total of 71 permanent plots ^{will} was established on State lands in the Bitterroot pine butterfly infestation as part of a cooperative survey with the U. S. Forest Service. Plots will be inspected annually for five years to assess tree mortality from pine butterfly defoliation.
5. A survey was conducted on State lands in the Lincoln area to determine the impact of a continuing mountain pine beetle infestation on a timber stand.

REVIEW OF CONDITIONS

Bark Beetles

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae (Hopk.) --

Infestations remained at high levels in overstocked second growth ponderosa pine stands of State, private and adjoining Forest Service lands in the Ninemile Creek drainage west of Missoula. Preliminary surveys of U. S. Forest Service commercial and precommercial and private landowner thinnings indicate a substantial reduction in stand susceptibility to beetle attack in the thinning blocks.

The infestation at Four Mile Flat near St. Regis, a combination of mountain pine beetle and pine engraver, Ips pini (Say), attacks continued to decline. Some new attacks were detected near Mill Creek and along the Clark Fork River near Four Mile Creek.

Losses were incurred for the third year in lodgepole pine stands in the Gallatin Canyon area, southwest of Bozeman. Attacks from 1972 were found in Squaw, Greek, Swan, Portal, Cascade, Hell Roaring and Logger Creek drainages as well as the main Gallatin Canyon near Squaw Creek Ranger Station. Numerous new attacks were found in the West Fork drainage of the Gallatin River.

Approximately 400 ponderosa pines were killed on private lands near Johnson and Butler Creeks and in Sawmill Gulch northwest of Missoula. Current attacks indicate losses of this magnitude will again occur in 1973.

Beetle attacks in scattered groups in the Blackfoot River drainage between Milltown and Ovando appear to be increasing. Approximately 300 ponderosa pines were killed on State and private lands near Ninemile Prairie, and another 400 ponderosa pines were killed on private lands in the Fish Creek area near Greenough. About 200 ponderosa pines were killed on private lands in the Monture Creek area.

Mountain pine beetle activity also increased along the Clark Fork River drainage from Rock Creek east to Bearmouth area. About 300 ponderosa pines were killed on private lands near the mouth of Rock Creek. Scattered new attacks were found in the Cramer Creek drainage near Beavertail Hill, and along the Clark Fork River.

An intensive ground survey showed a total of 68 ponderosa and lodgepole pines attacked in 1972 on 80 acres of State land in the Liverpool Creek drainage near Lincoln. Similar numbers were observed on adjacent private lands. New groups of attacks were found on State land in Lincoln Gulch.

Infestations in Grizzly Gulch south of Helena, which have persisted for five years with losses of approximately 400 ponderosa pines annually, continued to decline. However, activity along Prickly Pear Creek appears to be increasing.

where?
A total of 23 groups each consisting of from two to 20 ponderosa pine faders was mapped on the aerial survey.

SPRUCE BEETLE, *Dendroctonus refipennis* (Kirby) --

Infestations of spruce beetle were at low levels again in 1972. Some brood was found in windthrown Engelmann spruce in isolated spots in the Stillwater State Forest, but no attacks were found in standing trees. Prompt salvage of windthrow is being done to keep beetle populations from building.

DOUGLASFIR BEETLE, *Dendroctonus pseudotsugae* (Hopk.) --

Infestations that have been active for several years in the lower Rock Creek drainage east of Missoula continued to decline. Activity in the Thompson River drainage appears to be increasing, with a total of 21 groups each consisting of from five to 20 dead Douglasfir observed between Big Hole Creek and Big Rock Creek.

Douglasfir beetle activity on the Coal Creek State Forest declined. Only one group of 10 red-topped trees was observed. A total of seven groups of from three to 15 dead trees was observed on the Swan River State Forest.

A total of 575 faders ^{were} counted in several groups on private and adjoining Federal lands along the east side of the Crazy Mountains near Big Timber. Severe winter damage to Douglasfir was observed in several areas and may be a factor in the increased beetle activity.

PINE ENGRAVER, Inc pini (Say) --

Infestations are scattered throughout the pine types of the State. The beetles are associated with mountain pine beetle in infestations near St. Regis in the Ninemile Creek drainage west of Missoula, and in the Fish Creek area near Greenough. Activity was again observed along the west side of the Bitterroot Valley south of Missoula. Large populations which built up in slash from thinnings and road building in the Roman Creek area near Frenchtown caused some losses to standing trees.

Pine engraver persisted as a problem in ponderosa pines in residential areas in the Rattlesnake Creek area of Missoula where trees are subject to stress from landscaping, construction and other activities. In the Grant Creek area northwest of Missoula, several ponderosa pines were killed on recently subdivided building lots.

Defoliators

WESTERN SPRUCE BUDWORM, Choristoneura occidentalis (Free.) --

A total of approximately 2.5 million acres of Douglasfir, true fir and spruce forests showed aeriaily visible defoliation by budworm in 1972. In general, infestations west of the Continental Divide continued to increase, with greater defoliation especially observed in the northern part of the State. In some areas, heavy defoliation was responsible for curtailment of Christmas tree harvesting. Increase in defoliation areas in the Swan River State Forest continued.

East of the Continental Divide increases in defoliation were again observed in the Gallatin National Forest in parts of the Helena National Forest and in portions of Yellowstone National Park in Montana.

Heavy defoliation by budworm of trees on summer home sites around Lindbergh Lake was a cause of concern to the homeowners.

PINE BUTTERFLY, Neophasia menapia (Felder and Felder) --

Infestations increased significantly in the State. Approximately 40,000 acres of ponderosa pine including State, private and Federal ownerships in the Bitterroot Valley showed aeriaily visible defoliation in 1972. Another area of aeriaily visible defoliation near Rattlesnake and Grant Creeks and in Sawmill Gulch north of Missoula covered about 1,500 acres. Visible defoliation also occurred on the National Bison Range near Moiese.

Butterfly populations increased in many areas with large numbers being observed in the Clark Fork and Blackfoot River drainages east of Missoula and near Thompson Falls. Although additional areas of visible defoliation are expected in 1973, the numbers of predators and parasites of pine butterfly increased markedly in areas of high butterfly populations, and are expected to be a significant factor in reducing butterfly populations in these areas in 1973.

In 1972, the Division of Forestry and the U. S. Forest Service began a cooperative damage survey to measure the effects of defoliation in terms of inhibited growth and tree mortality. A total of 71 permanent plots was established on State land in the Sweeney Creek area near Florence. Plots will be examined for at least the next five years.

Plans of the Division of Forestry for 1973 include participation in a proposed cooperative field test of the effectiveness of aerial and ground applications of several insecticides against pine butterfly. The tests will be under the leadership of the Insecticide Evaluation Project, Pacific Southwest Forest and Range Experiment Station and Region 1, U. S. Forest Service.

LARCH CASEBEARER, Coleophora laricella (Hbn) --

All of the western larch type in Montana is infested. Again, as in 1971, most western larch stands at lower elevations received only light or moderate feeding damage. Exceptions which suffered heavy defoliation were several stands bordering Flathead Lake.

DOUGLASFIR TUSSOCK MOTH, Orgyia pseudotsugata (McD.) --

This insect was again noted on a few ornamental spruce in Missoula and Polson. Historically, tussock moth infestations have first appeared around homes and farms, with surrounding forested areas becoming infested later. The scattered observations of this moth may indicate the start of an outbreak in western Montana.

PINE SAWFLY, Neodiprion sp. --

Approximately 700 acres of ponderosa pines received moderate to heavy defoliation by a pine sawfly near Casino, Beaver and Castle Creeks south of Lewistown. It appears that the infestation has collapsed due to a possible virus infection of the larvae or some unknown cause.

Seed and Cone Insects

The western spruce budworm continued to be the most serious pest of Douglasfir cone crops. East of the Continental Divide, the amount of seed produced for natural regeneration was greatly reduced because of budworm damage to developing cones. Seed collection from some seed orchards in the State was impossible because of budworm feeding.

Other Insects

A number of shade and ornamental trees in the city of Billings suffered from insect damage. Extremely heavy populations of the oystershell scale, Lepidosaphes ulmi (L.), have been found on several trees. Populations of other scales also appear to be increasing. An intensive ground survey is being planned to determine the extent of insect damage in the city and the species involved.